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MICROSTRUCTURE, CAVITATION STRENGTH AND NONLINEARITY OF SEAWATER

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Practically important properties of real liquids are their nonlinear properties, which include a nonlinear acoustic parameter, as well as cavitation strength – a discontinuity of the continuity of a liquid at high intensities in an acoustic wave. The relationship between the thresholds of acoustic cavitation, the parameter of acoustic nonlinearity of the liquid and the distribution of gas and vapor-gas bubbles at different liquid temperatures has been established. The interrelation of these characteristics for seawater and the correspondence between theoretical and experimental results are shown. The purpose of the work is to study the relationship of structural heterogeneities of the active ocean layer with nonlinear characteristics of seawater. The novelty of the work consisted in the creation of new theoretical models, numerical modeling based on them and experimental study of the structure of the marine environment with high spatial and temporal resolution.

Keywords: seawater, bubbles, nonlinearity, cavitation strength, sound scattering

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